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Chapter Twenty-three

THE FISHERIES OF SOUTHEAST ASIA

The Fish Population

136 Because equatorial waters have low salinity and low oxygen content, it has frequently been assumed that they have a low fish population. That view is difficult to maintain for the shallow waters of Southeast Asia where, according to Herre, the number of kinds of fish and their diversification is unrivalled by that of any other marine region. Whether this paradox disproves the theoretical view about equatorial seas or shows that the fish population depends more on the local supply of nutrients which so broken and well-watered a region as Southeast Asia discharges to the sea in extraordinarily large quantities, has yet to be demonstrated. There is no co-ordinated study of the fishing industry as a whole in this region.

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Until recently, only the generic character of these Southeast Asia fish had been studied, from which it appears that, while by no means all of them have been named and identified, over 1,500 varieties are normally fished round Java, over 500 have been named as economically valuable round Malaya, and similar large varieties are reported from all territories. Most of the fish known are inshore fish, closely dependent on food particles carried from shore to sea and on the great growth of plankton, seaweeds and corals which supply fish food. Because the shores of the landmasses in most of this region are frequently backed by swamps, there is a very considerable fish population on the land surface itself, in a gradual transition between shallow water marine fish and swamp or riverine fish. Thus the fishing industry is not merely an inshore activity: it continues very vigorously inland, in the swamps, in the flooded paddyfields and their canals, in the lakes and lagoons, and in the rivers.

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Though the deep-water fish of Southeast Asia have only in recent years been exploited commercially, by Japanese trawlers, they exist in these waters in surprising numbers. Schools of sardines some 10 miles long have been seen, together with frequent

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great shoals of mackerel and bonito. Porpoises (mammals which live on fish and are a guide to the fish density) have been seen in a school which packed an area 15 miles long and 2 miles broad. Plankton occurs at times in astounding quantities, practically smothering all other fish life in the neighbourhood. The movements and migrations of these fish of deeper waters have been little studied and the inshore fishing has been enough to meet local food needs, as well as not demanding too complex a technique or too great a capital outlay by the local fishermen who are generally very few, and too poor to equip themselves for long distance deepwater trips. A major impediment to introducing the elaborate systems of trawling and seining which have been developed in temperate seas is the frequency of coral reefs and knolls which, although attracting fish, catch the nets and ruin them.

Fish as a Staple Food

Fish is a staple in the Southeast Asia diet as complement to rice. It supplies calcium, iodine and salt as well as animal protein, items otherwise not easily come by in these areas, or too expensive for the peasants. By habit Southeast Asia people are rice-fish-curry eaters and vegetables in the European sense enter very little into their meals. They are largely vegetarian but not interested in vegetables. Fishing has an importance in local ecologies second only to rice. In Malaya, for example, well over 80 lbs. of fish is normally consumed by every man, woman and child every year. When looking through the records of any one territory, however, the great significance of fish is not apparent because fishing is a mobile and widely dispersed activity not easily checked, the more illusive statistically because it plays little or no part in revenues.

Several stages of commercialisation are met with but subsistence fishing predominates. In every paddyfield and swamp, villagers go fishing for their personal needs; on the coast many fishermen are part-time, sharing their labour between a paddyfield and a fishing boat. Some villages have specialised fishermen whose produce goes into exchange among the landsmen to make the village self-supporting. Gradually fishing for sale has become possible, yet there are major difficulties of transport to consuming centres, of organisation between fishermen and consumer, and of preserving the fish in good condition during transport.

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Trade in Fish

228 Apart from that fish eaten fresh on the coasts, the bulk is preserved for commerce and for storing during seasons when the sea is too violent, by sun-drying, salting or by conversion into one of the highly-spiced, partly-fermented fish sauces widely admired by Southeast Asia people (i.e. *blachan* in Malaya, *trassie* in Java, *nuoc mam* in Indochina, *kapi* in Siam, *ngapi* in Burma). Huge quantities of fish in these forms move inland within each country and there has developed a considerable movement of preserved fish between the different Southeast Asia territories, to supply the plantation and industrial workers. From Siam and Indochina alone preserved fish to the value of about $12 million was exported each year before the war. That fish preserving is widely practised even for local use means that the activity is very largely buffered from the alternations of glut and scarcity which are common in fishing industries. The transport of the preserved fish both internally and externally tends to be by sea for cheapness, a paramount consideration in a food for peasants, and because there are few alternatives. Only in a few areas is there a speedy land service able to deliver fresh fish to inland urban centres.

563 228 Commercialisation of fishing has brought in foreign personnel. Whenever fishing is carried on for export as cash sales, Chinese are frequently the principal fishermen, as at Bagansiapiapi (Sumatra) and Pangkor (Malaya), in the deep-sea fishing centred on Singapore (once associated with the Japanese) and even in the cultivation of fish in Javanese ponds. Moreover, Chinese are strongly represented as the middlemen who handle the trade from the actual fisherman to the ultimate consumer, and they are generally responsible for processing the wet fish into transportable forms.

Freshwater Fishing

226 While the absence of deep-sea and mechanical mass fishing methods is one peculiarity of Southeast Asia, equally remarkable is the emphasis on freshwater fishing. Very largely the methods of freshwater fishing—traps and small nets—have established the styles used for inshore sea fishing. For the most part the value of this freshwater production cannot be gauged though it has major importance in local diet. Two variations of freshwater fishing

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have exceptional interest. In Indochina the Tonle Sap fisheries represent the most productive of the natural fresh fisheries, and in Java has been developed a large cultivation of fish in ponds.

From Tonle Sap over 25 tons of fish are produced annually from each square mile of its surface, a productivity ten times greater than that of the well-fished North Sea of Europe, and unique in its intensity. This exceptional production is possible because the large area covered from early June by shallow floods enables fish to spawn profusely in about 3,000 square miles of inundated forest, where abundance of vegetable matter makes the fish grow larger than those in any of the neighbouring rivers. Over 30,000 persons are normally fishing this lake and the full-time fishermen live in villages of pile dwellings scattered round it; of these lake-side fishing villages Snoc Trou is the most important. A considerable number of migrant fishermen, Annamese, Chinese and Malay, move into this area temporarily for the peak fishing season from October to January. Over 135,000 tons of fish are obtained annually and half of this is dried before leaving the region; some fish are sent alive towards the estuary of the Mekong in floating cages of bamboo enclosing what is virtually an artificial shoal moving through the water to the market, an ingenious device for transporting live fish. The commercial side of this fishing is almost entirely Chinese. Over-fishing has been going on in recent years and controls are becoming necessary.

In Java two types of pond fishing have been evolved. Near Batavia, Sourabaya and Semarang where the demand for fish is great, mangrove swamps are partially enclosed to control the tidal water and into the enclosures are placed, between April and July, the spawn and young sea fish gathered among bundles of leaves which fishermen have previously placed in the open sea for the purpose. The spawn and young fish are carried to the fishponds in jars and there left to fatten on algae and water weeds cultivated for them. The milkfish (Chanos chanos) is popular for this purpose and reaches marketable size within a year. Elsewhere inland artificial freshwater ponds have been built, covering a total area estimated at over 100,000 acres, in which fish of the carp type are bred and fattened all the year round; 65,000 tons of fish are obtained every year by this means. Freshwater fisheries are now encouraged in every little tank or pond as a form of mosquito control.

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round the Gulf of Siam to Singapore is well fished and is one of the few known tracks of fish migration in these seas, possibly relating to the southwesterly drift of the Mekong discharge. The Malacca Strait also has vigorous fishing industries, associated with the fishing at Bagansiapiapi and Pangkor which have been commercialised by Chinese. Along both sides of the Malacca Strait fish traps stand out from the coast almost continuously for mile after mile. Bagansiapiapi fish comes almost entirely from traps set across the creeks of the Rokan River. In the Philippines, themselves spread athwart the equatorial currents of the Pacific like a great trap, the annual catch of fish exceeds that of any other territory, yet the Philippines import much canned fish in addition.

For most Southeast Asia countries information about the significance of fishing activities is sketchy, although in every case fish ranks high in the basic foodstuffs. The total activity in fishing is enormous; probably 3 million people are engaged in Southeast Asia fishing and the amount of internal trade in fish must total far higher than so widely dispersed and so little commercialised an industry might at first suggest. There is always a substantial movement of fish in various forms from the coasts to the interiors and from one territory to another, as the following points indicate:

Burma.—That Burmese developed their tradition well in the interior may explain why it is only in Arakan and Tenasserim there has been intensive sea fishing. Within the Irrawaddy distributaries South Indians have taken to fishing and they deliver fish on ice to the rice farmers of Lower Burma, whose diet is more monotonously rice-and-fish than is the case towards the interior. The Buddhist tradition causes Burmese to disrespect fishermen on the grounds that they are responsible for the destruction of many living creatures. From Tenasserim and Arakan, surplus fish is exported to Malaya and India respectively, the total value (over 1935–40) being of the order $115,000 annually, of which Malaya takes over three-quarters. In net trade Burma is a fish-deficit area, importing over $3½ million of fish (about 12,000 tons), 60 per cent from India.

Malaya.—About 100,000 tons of fish were regularly landed on Malayan coasts by some 20,000 fishing boats (1950) chiefly on the coasts of Selangor, Perak, Trengganu, Pahang and Penang. At Singapore heavy prewar landings were accounted for by the deep-sea trawl-fishing done by Japanese crews working at long range

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among the remoter islands and off Borneo. In addition to this home production, over $9 million of fish (1947) was imported dry from the East Indies, Siam and Indochina, mainly as part of Singapore's entrepôt trade; only a small portion of this import was consumed in Malaya.

In Malaya and Burma pond cultivation has been negligible.

East Indies.—In Java intensive fishing is carried on, though its coast is small in proportion to its population and production has rapidly become inadequate, in contrast with the thinly-peopled coastlines of Sumatra, Celebes and Borneo. Java's fishing concentrates upon the northwest coast where 21,000 tons were caught in 1940; farther east along the north coast fishing diminishes. A large part of the catch moves to West Java and the Outer Islands for the plantation workers. Since 1900 the interest in fishing declined until Java became no longer self-supporting in fish and imported from Siam and Indochina which together supplied about 45,000 tons annually in the seasons 1938–40.

To establish commercialised fishing in the Outer Islands was no easy matter, but in Sumatra and Borneo a start had been made. At Bagansiapiapi about 12,000 Chinese had established a large fishery producing annually about 35,000 tons of fish which went to Java (60 per cent), Singapore, Penang and Malacca. To salt the fish nearly 20,000 tons of salt moved into Bagansiapiapi. In Borneo, Soekadana on the west and Pegaban and Kotabaru on the east were fishing centres, supplying the interior and exporting yearly about 4,000 tons of dried fish to Java; Macassar functions as a market for pearl and shell fishing and for the *abalone* (Holothuria) catch of the eastern seas besides exporting annually about 1,300 tons of *agar agar* (a seaweed for jellies).

To Java and Madoera just before the war 49,000 tons of cheap fish were imported from Siam and Indochina by way of Singapore, 46,000 tons from East Sumatra, and 8,000 tons from other Outer Islands. The home catch of sea fisheries totalled about 94,000 tons per annum, and fish weighing nearly 30,000 tons (1947) was obtained from ponds and rivers. Lake Tempe (South Celebes) has been intensively developed for inland fishing and 3,000 tons of dried and salted fish were exported from that district in 1946.

Indochina.—Although the physiography of the Indochina coast appears to favour sea fishing, yet coastal fishing interests local people less than the inland fisheries. A luminant oil for peasants

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is extracted from Indochinese fish. Salt water fishing produced 150,000 tons annually before the war. Only along the Annam coast, particularly near deeper waters round Tanh Hoa, is inshore fishing very active on the basis of trawling and seining, which are unusual styles for Southeast Asia. The Cambodian coast, meeting place of migrant fish from the Mekong mouth and the Siamese and Kra coasts, produces fish of exceptional size. The Mekong distributaries are also considerably fished to supply the Saigon and Cochinchina markets. Of the freshwater fishing that in Tonle Sap is the best known and most productive, but there are others well developed in the streams of Tonkin and along the Mekong, where oxbow lakes and artificial ponds are used for seasonal fish cultivation.

Fish products rank high in Indochina's exports, though valued only at one per cent of the total exports. Shipments usually go to Malaya and averaged 37,000 tons per annum for the period 1939–41, but they were valued at $2 million in 1950.

Siam.—Every Siamese is said to eat some fish with every meal of rice. At any rate the Siamese consumption of fish is estimated to be larger than for any single Southeast Asia unit. Much of the fish comes from inland fisheries and the floods of the Chao Praya and the Nam Mun create natural ponds which last long enough to fatten many fish. These inland fisheries are not well documented. Fishing is taxed according to the implement used rather than in relation to the amount caught, yielding a revenue of $.9 million (1944). Siamese sea fishing provides that dried fish which is exported. Mackerel, sardine and pilchard types migrate along Siam's attenuated coast and they are exhaustively fished as a whole though individual fishing units are small and poorly organised. At certain seasons the sea offshore is almost solid with squid which are caught in large numbers for eating. Probably 43,000 tons of fish are annually salted on the coast for transport and trade, but poor organisation and careless salting with low-grade brine taken direct from the sea has given Siamese fish a low reputation; it ranks as the lowest grade of salt fish in Southeast Asia markets. The export usually ranks at about $2.5 million annually (100,000 tons 1941), going to Singapore, Penang and Hongkong, largely for re-export from those places. Because the local fish is inferior, higher grade fish are annually imported from surrounding areas to a value of some $1.5 million (1950). The fish

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trade was largely Chinese, but Japanese fishermen had pirated the coast for years, using large trawlers serving markets in Singapore and in Japan.

Philippines.—Fish is as important in Filipino diet as in that of peoples on the mainland, and it is likewise an inadequately documented phase of their activities. Only in 1939 was a census of fishing taken. The amount that went into inter-island trade was small compared with the catch and only 100 out of the 1,600 types of local edible fish were marketed. Filipino fishing resembles that elsewhere in Southeast Asia and both inshore and inland methods are used. In the last decade also, some deep fishing had developed and steam trawlers landed quantities of *bonito*. Deep-sea fishing centres on Batangas, Manila and Sulu, whereas the inshore types are most developed round Mindoro, Batangas and Bulacan. More than 90 per cent of inland fishing (from rivers, ponds and lakes) comes from Batangas, Bulacan, Laguna and Rizal. The Pampanga and Iloilo districts have many fish ponds. Pearl oysters are gathered sporadically round the Palawan and the Sulu Islands.

In 1939 about 180,000 Filipinos were fully engaged in fishing and another 200,000 fished part-time. The total catch was then valued at $150 million. Fish had no significance as an export and about 400,000 tons were imported in 1940.

Postwar Fishing

Casually organised and producing a poorly graded commodity Southeast Asia fishing has everywhere an important place in the diet of local people. The international trade in fish within the region has certain resemblances to the rice trade in direction, in variability from year to year, and in foreign monopolisation of the middleman function and trade organisation. On the other hand, the dispersed and loose organisation of Southeast Asia fishing proved an advantage in the war period. Its simplicity of operation, use of locally-made boats for fishing and bulk transport, and ease of replacement of locally-made equipment, meant it suffered lightly from the war.

The fish trade between Southeast Asia countries was, however, paralysed, owing to difficulties of procuring bulk salt supplies and of transport, but the rice-eating people in rural areas were not seriously deprived of their supplementary fish, so much of which was caught nearby. The large towns which once consumed fresh